



**Mathematics
Grade 6
Scoring Guide for
Released Item #55
Juanita Swims
Fall 2006**



- 55 Juanita swam $\frac{1}{2}$ mile each day for 3 days in a row and then swam $\frac{3}{4}$ mile each day for the next 3 days.

Part A Write a mathematical expression that gives the number of miles that Juanita swam.

Part B Using your answer to **Part A**, calculate the number of miles that Juanita swam during the 6 days combined.

ANSWER THIS ITEM IN YOUR ANSWER DOCUMENT.

SHOW ALL YOUR WORK IN YOUR ANSWER DOCUMENT.

Mathematics Rubric for Juanita Swims

Scoring Rubric

- The student provides evidence of combining the miles swam during the first three days. **(1 point)**
- The student provides evidence of combining the miles swam during the last three days. **(1 point)**
- The student provides evidence of combining the totals. **(1 point)**
- The student provides the correct solution ($3\frac{3}{4}$, $15/4$, or 3.75). **(1 point)**

Note 1: The student must show at least one correct mathematical expression to earn any of the first three points.

Note 2: The student may first combine the number of miles and then multiply by the number of days.

Note 3: The student may not receive a 4 if there is an incorrect computation on the page (e.g., a run-on equation).

Anchor Paper 1 – Score Point 4

4 points

A1
(4)

$$\begin{array}{l}
 1\frac{1}{2} \text{ mile} \cdot 3 = 1\frac{1}{2} \text{ miles} \\
 \frac{3}{4} \text{ mile} \cdot 3 = 2\frac{1}{4} \text{ miles}
 \end{array}
 \left. \begin{array}{l} \\ \\ \end{array} \right\} \begin{array}{l} 1\frac{1}{2} \text{ mile} \\ + 2\frac{1}{4} \text{ miles} \\ \hline 3\frac{3}{4} \text{ miles} \end{array}$$

$3\frac{3}{4}$ miles that Juanita

The number of miles that Juanita swam over the 6 days combined is $3\frac{3}{4}$ miles.

Anchor Paper 1
Score Point 4

The response demonstrates complete understanding of writing and using a mathematical expression.

- The student correctly combines the miles swam in the first three days by providing the expression $1\frac{1}{2} \text{ mile} \cdot 3$. (1 point)
- The student correctly combines the miles swam in the last three days by providing the expression $\frac{3}{4} \text{ mile} \cdot 3$. (1 point)
- The student shows evidence of combining the totals in the mathematical expression $1\frac{1}{2} \text{ mile} + 2\frac{1}{4} \text{ miles}$. (1 point)
- The student calculates the correct solution of $3\frac{3}{4} \text{ miles}$. (1 point)

The response earns **4 points**.

Anchor Paper 2 – Score Point 4

4 points

$$\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{2}{4} + \frac{2}{4} + \frac{2}{4} = \frac{15}{4} = 3\frac{3}{4}$$

A2
④

Juanita swims $3\frac{3}{4}$ miles in a period
of 6 days

Anchor Paper 2

Score Point 4

The response demonstrates complete understanding of writing and using a mathematical expression.

- The student correctly combines the miles swam in the first three days and the miles swam in the last three days and combines all miles together in the one expression $3/4+3/4+3/4+2/4+2/4+2/4$. **(3 points)**
- The student calculates the correct solution of $3\frac{3}{4}$. **(1 point)**

The response earns **4 points**.

Anchor Paper 3 – Score Point 4

4 points

A3
(4) $\frac{1}{2}$ mile first three days = $1\frac{1}{2}$ $\frac{3}{4}$ mile second three days = $2\frac{1}{4}$

$$\begin{array}{r} 1\frac{1}{2} = 1\frac{2}{4} \\ + 2\frac{1}{4} = 2\frac{1}{4} \\ \hline \end{array}$$

 $3\frac{3}{4}$ miles altogether

Anchor Paper 3

Score Point 4

The response demonstrates complete understanding of writing and using a mathematical expression.

- The student gives evidence of mentally combining the miles swam in the first three days by providing the correct sum of $1\frac{1}{2}$. **(1 point)**
- The student gives evidence of mentally combining the miles swam in the last three days by providing the correct sum of $2\frac{1}{4}$. **(1 point)**
- The student shows evidence of combining the totals, $1\frac{1}{2} + 2\frac{1}{4}$, in a mathematical expression. **(1 point)**
- The student calculates the correct solution of $3\frac{3}{4}$ miles. **(1 point)**

The response earns **4 points**.

Anchor Paper 4 – Score Point 3

4 points

	.5 miles.		.75 miles.
1 day	.5 miles.	1 day	.75 miles.
2 day	1 mile.	2 day	1.5 miles.
3 day	1.5 miles.	3 day	2.25 miles.

$1.5 + 2.25 = 3.75$

Juanita swims 3.75 miles in 6 days. Juanita swims 3.75 miles in 6 days.

$.5 + .5 + .5 = 1.5$
 $1.5 + 7.5 + 7.5 + 7.5 = 3.75$

A4 (3)

Anchor Paper 4

Score Point 3

The response demonstrates understanding of writing and using a mathematical expression.

- The student correctly combines the miles swam in the first three days in the mathematical expression $.5 + .5 + .5 = 1.5$. Using decimal equivalents of distances is acceptable. (1 point)
- The student correctly combines the miles swam in the last three days (2.25). (1 point)
- The student shows evidence of combining the totals, $1.5 + 2.25$, in a mathematical expression. (1 point)
- The student calculates the correct solution of 3.75 miles. (1 point)

An incorrect computation, stating $1.5 + 7.5 + 7.5 + 7.5 = 3.75$, is given in the work space. This error results in the response scoring a 3. (See Note 3)

The response earns **3 points**.

Anchor Paper 5 – Score Point 3

4 points

A5
(3)

$$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{3}{6}$$

$$\frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{9}{12}$$

$$\frac{3}{6} + \frac{9}{12} = 1\frac{12}{12}$$

Juanita swam $1\frac{12}{12}$ of a mile each day for the six days.

Anchor Paper 5
Score Point 3

The response demonstrates understanding of writing and using a mathematical expression.

- The student gives evidence of correctly combining the miles swam in the first three days in the mathematical expression $1/2+1/2+1/2$. **(1 point)**
- The student gives evidence of correctly combining the miles swam in the last three days in the mathematical expression $3/4+3/4+3/4$. **(1 point)**
- The student shows evidence of combining the totals, even though those totals are incorrect and result from incorrect math. The numbers represent what the student believes to be correct sub-totals, $3/6+9/12$. **(1 point)**
- The student calculates an incorrect solution of $1\ 12/12$. **(0 points)**

The response earns **3 points**.

Anchor Paper 6 – Score Point 3

4 points

You would do: $\frac{1}{2} \times 3$ and
 $\frac{3}{4} \times 3$

Ab
(3)

She swam 3.75 miles

**Anchor Paper 6
Score Point 3**

The response demonstrates understanding of writing and using a mathematical expression.

- The student correctly combines the miles swam in the first three days in the mathematical expression $1/2 \cdot 3$. **(1 point)**
- The student correctly combines the miles swam in the last three days in the mathematical expression $3/4 \cdot 3$. **(1 point)**
- The student shows no evidence of combining the totals. The word *and* does not indicate an addition process. **(0 points)**
- The student indicates the correct solution of 3.75 miles. **1 point)**

The response earns **3 points**.

Anchor Paper 7 – Score Point 3

4 points

$\frac{1}{2} \times 3 \text{ days} = 1\frac{1}{2} \text{ miles}$ $\left\{ \frac{1}{2} + \frac{1}{2} = 1 + \frac{1}{2} = 1\frac{1}{2} \right\}$
 $\frac{3}{4} \times 3 = 2\frac{1}{4} \text{ miles}$ $\left\{ \frac{3}{4} + \frac{3}{4} = 1\frac{1}{2} + \frac{1}{4} = 1\frac{3}{4} \right\}$

total mi. $\left\{ 1\frac{1}{2} + 2\frac{1}{4} = 3\frac{3}{4} \text{ total mi.} \right\}$

Juanita swims a total of $1\frac{1}{2}$ miles the first 3 days.
 Juanita swims a total of $2\frac{1}{4}$ miles the next 3 days.
 Juanita swims a total of $3\frac{3}{4}$ miles in the 6 days combined.

A7
③

Anchor Paper 7

Score Point 3

The response demonstrates understanding of writing and using a mathematical expression.

- The student correctly combines the miles swam in the first three days in the mathematical expression $1/2 \text{ mile} \cdot 3 \text{ days}$. **(1 point)**
- The student correctly combines the miles swam in the last three days in the mathematical expression $3/4 \text{ mile} \cdot 3 \text{ days}$. **(1 point)**
- The student shows evidence of combining the totals in the mathematical expression $1\frac{1}{2} + 2\frac{1}{4}$. **(1 point)**
- The student calculates the correct solution of $3\frac{3}{4} \text{ miles}$. **(1 point)**

The computation includes 2 run-on equations ($1/2 + 1/2 = 1 + 1/2 = 1\frac{1}{2}$ and $3/4 + 3/4 = 1\frac{1}{2} + 3/4 = 2\frac{1}{4}$). The error results in the response scoring a 3. (See Note 3)

The response earns **3 points**.

Anchor Paper 8 – Score Point 3

4 points

$$\frac{1}{2} = .5 \times 3 = 1.5 \text{ miles} \quad \frac{3}{4} = .75 \times 3 = 2.25 \text{ miles}$$

$$\begin{array}{r} 1.5 \\ + 2.25 \\ \hline 3.75 \text{ miles} \end{array}$$

A8
(3)

Juanita swam 3.7 miles in the six days combined that she swam.

Anchor Paper 8

Score Point 3

The response demonstrates understanding of writing and using a mathematical expression.

- The student gives evidence of combining the miles swam in the first three days by providing the sum of 1.5 in a correct vertical equation. **(1 point)**
- The student gives evidence of combining the miles swam in the last three days by using the sum of 2.5 in a correct vertical equation. **(1 point)**
- The student gives evidence of combining the totals in the vertical mathematical expression 1.5+ 2.25. **(1 point)**
- The student calculates the correct solution of 3.75 miles and incorrectly rounds to 3.7. The use of rounding is inappropriate for this prompt. **(0 points)**

The response includes two run-on equations, $\frac{1}{2} = .5 \times 3 = 1.5 \text{ miles}$ and $\frac{3}{4} = .75 \times 3 = 2.25$, which do not affect the points earned in a 3 level response. See Note 3.

The response scores **3 points**.

Anchor Paper 9 – Score Point 2

4 points

$$\frac{1}{2} + \frac{1}{2} + \frac{1}{2} = 1\frac{1}{2} \text{ the total amount of } \textcircled{2}$$

miles that Juanita swam for the first 3 days were $1\frac{1}{2}$ miles.

$$\frac{3}{4} + \frac{3}{4} + \frac{3}{4} = \frac{9}{12} \text{ the total amount of miles that Juanita swam for the last 3 days were } \frac{9}{12} \text{ miles}$$

Anchor Paper 9

Score Point 2

The response demonstrates partial understanding of writing and using a mathematical expression.

- The student gives evidence of correctly combining the miles swam in the first three days in the mathematical expression $1/2+1/2+1/2$. **(1 point)**
- The student gives evidence of correctly combining the miles swam in the last three days in the mathematical expression $3/4+3/4+3/4$. **(1 point)**
- The student does not combine the totals. **(0 points)**
- The student does not calculate a solution. **(0 points)**

The response earns **2 points**.

Anchor Paper 10 – Score Point 2

4 points

$$\left(\frac{1}{2} \times 3\right) = 1\frac{1}{2} + \frac{3}{4} \times 3 = 2\frac{1}{4} = 1\frac{1}{4} + 2\frac{1}{4} = 3\frac{3}{4}$$

A10
(2)Juanita swam for $3\frac{3}{4}$ miles.

Anchor Paper 10

Score Point 2

The response demonstrates partial understanding of writing and using a mathematical expression.

- The student gives evidence of correctly combining the miles swam in the first three days in the mathematical expression $1/2 \times 3$. **(1 point)**
- The student gives evidence of combining the miles swam in the last three days in a run-on equation. When the combination of miles is shown in a run-on equation, the expression up to the first equal sign is the only part considered correct. In this response, only $1/2 \times 3$ (the first 3 days) is correct. **(0 points)**
- The student does combine the totals; however, because the combination is part of a run-on equation, it is not considered correct. **(0 points)**
- The student calculates a correct solution of $3\frac{3}{4}$ miles. **(1 point)**

The response earns **2 points**.

Anchor Paper 11 – Score Point 1

4 points

A11
①

$$1, \frac{3}{2}, \frac{9}{4}$$

$$2, 3\frac{3}{4} \text{ miles}$$

Anchor Paper 11

Score Point 1

The response demonstrates some understanding of writing and using a mathematical expression.

- The student gives no evidence of correctly combining the miles swam in the first three days. **(0 points)**
- The student gives no evidence of combining the miles swam in the last three days. **(0 points)**
- The student gives no evidence of combining the totals. **(0 points)**
- The student shows a correct solution of $3\frac{3}{4}$ miles. **(1 point)**

The response earns **1 point**.

Anchor Paper 12 – Score Point 1

4 points A13

A. Juanita swims $\frac{1}{2}$ mile each day for 3 days. ①

$\left[\frac{1}{2} = 50\% \quad 50 \times 3 = 150\right]$ Juanita swims $\frac{3}{4}$ mile each day for 3 days. $\left[\frac{3}{4} = 75\% \quad 75 \times 3 = 225\right]$

B. $150 + 225 = 375$ m (miles). Juanita swam 375 m (miles) together with the 3 day combined.

key [] = expression
 $\%$ = percent
 $+$ = add
 \times = multiply
 $\frac{1}{2}$ = fraction

Anchor Paper 12

Score Point 1

The response demonstrates some understanding of writing and using a mathematical expression.

- The student does not give evidence of correctly combining the miles swam in the first three days. **(0 points)**
- The student does not give evidence of correctly combining the miles swam in the last three days. **(0 points)**
- The student shows evidence of combining the totals in a mathematical expression, even though those totals are incorrect and result from incorrect math. The numbers represent what the student believes to be correct sub-totals of $150 + 375$. **(1 point)**
- The student calculates an incorrect solution of 375 miles **(0 points)**

The response earns **1 point**.

Anchor Paper 13 – Score Point 0

4 points

A14

Gumbia swam $3\frac{1}{2}$ miles 3 days she went $1\frac{1}{2}$ miles, and then
on the next 3 days she went $2\frac{1}{2}$ miles. which gives a total of
 $3\frac{1}{2}$ miles.

Anchor Paper 13

Score Point 0

The response shows very little understanding of writing and using a mathematical expression. There is no **mathematical expression** in the response; therefore, no credit can be earned for the first three bullets. (See Note 1) The solution provided is incorrect.

The response earns **0 points**.

Anchor Paper 14 – Score Point 0

4 points

She swam $\frac{1}{2}, \frac{1}{2}, \frac{1}{2}$ and then she
swim $\frac{3}{4}, \frac{3}{4}, \frac{3}{4}$. A15
~~0~~

Anchor Paper 14

Score Point 0

The response shows very little understanding of writing and using a mathematical expression. There is no **mathematical expression** in the response; and no solution is given.

The response earns **0 points**.

Anchor Paper 15 – Score Point 0

4 points

A16

0

Juanita swims $\frac{1}{2}$ mile each day for 3 days in a row and then $\frac{3}{4}$ miles that day for the next 3 days. Using your expression from the first part, calculate the number of miles that Juanita swam during the 6 days combined.

The total number of miles Juanita swam during the 6 days combined was $\frac{12}{18}$ miles.

Anchor Paper 15

Score Point 0

The response shows very little understanding of writing and using a mathematical expression. There is no **mathematical expression** in the response; and an incorrect solution of $12/18$ is given.

The response earns **0 points**.